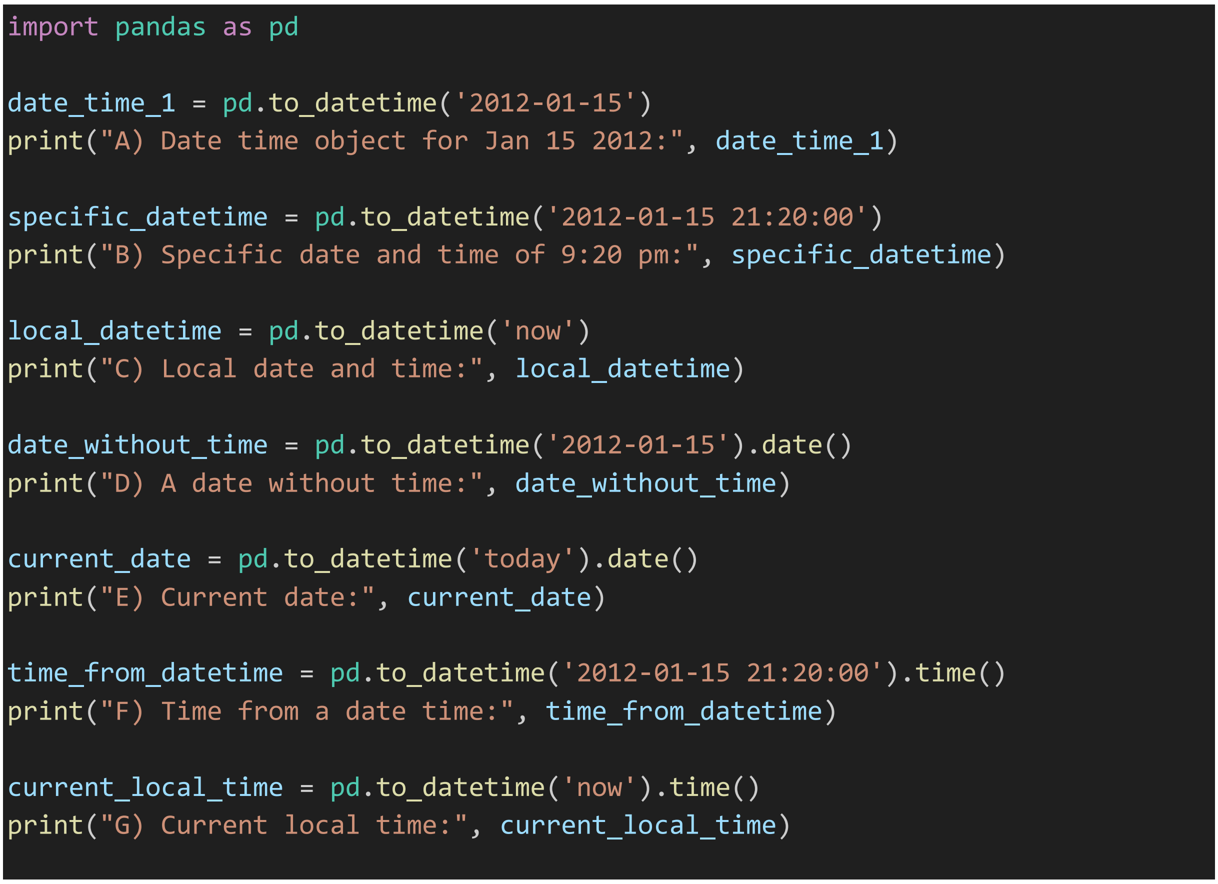
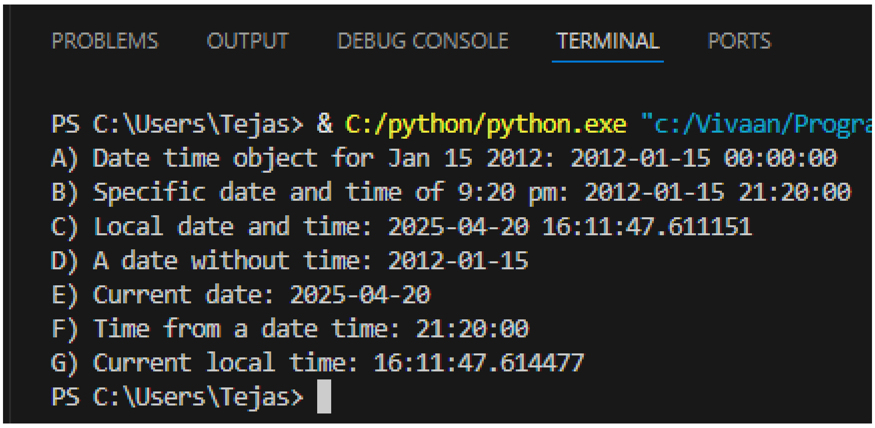
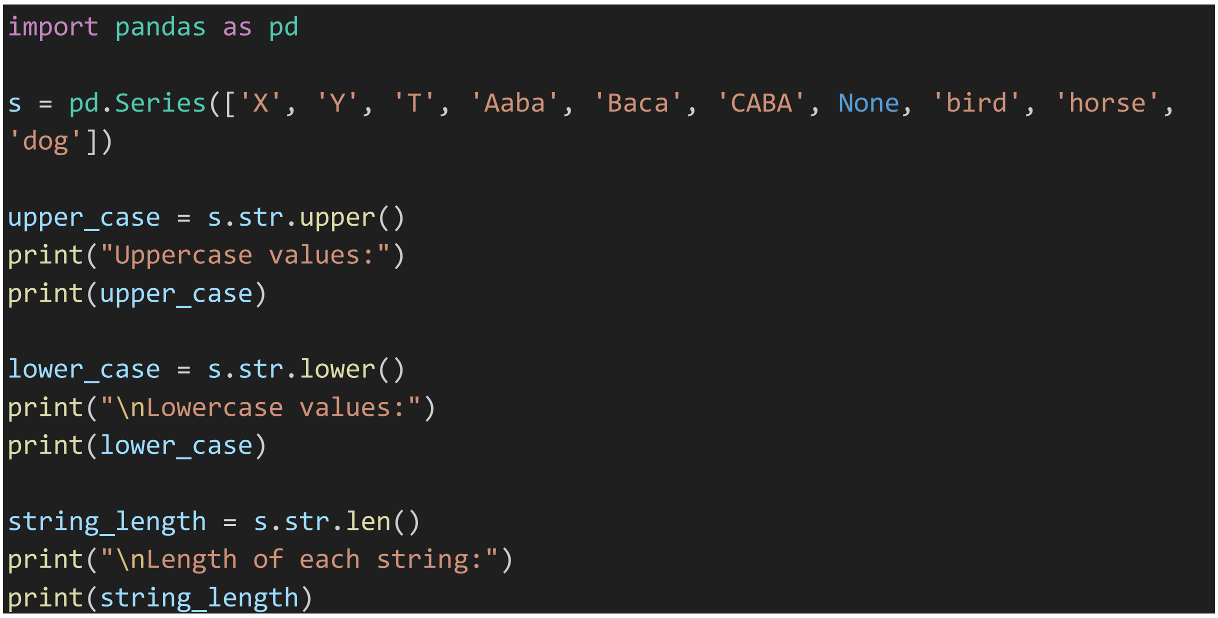


```python
import pandas as pd

date_time_1 = pd.to_datetime('2012-01-15')
print("A) Date time object for Jan 15 2012:", date_time_1)

specific_datetime = pd.to_datetime('2012-01-15 21:20:00')
print("B) Specific date and time of 9:20 pm:", specific_datetime)

local_datetime = pd.to_datetime('now')
print("C) Local date and time:", local_datetime)

date_without_time = pd.to_datetime('2012-01-15').date()
print("D) A date without time:", date_without_time)

current_date = pd.to_datetime('today').date()
print("E) Current date:", current_date)

time_from_datetime = pd.to_datetime('2012-01-15 21:20:00').time()
print("F) Time from a date time:", time_from_datetime)

current_local_time = pd.to_datetime('now').time()
print("G) Current local time:", current_local_time)
```

Output:

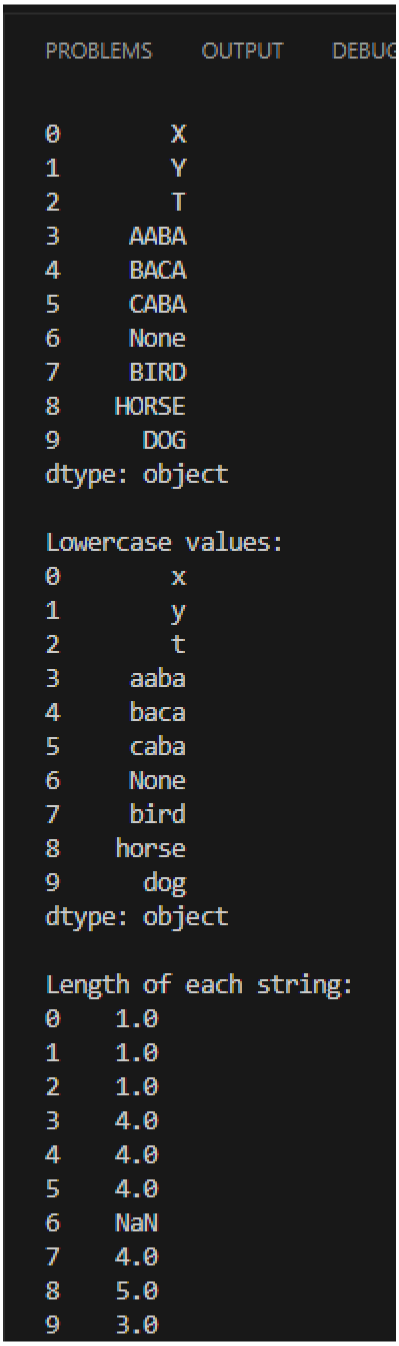


```
PS C:\Users\Tejas> & C:/python/python.exe "c:/Vivaan/Progra
A) Date time object for Jan 15 2012: 2012-01-15 00:00:00
B) Specific date and time of 9:20 pm: 2012-01-15 21:20:00
C) Local date and time: 2025-04-20 16:11:47.611151
D) A date without time: 2012-01-15
E) Current date: 2025-04-20
F) Time from a date time: 21:20:00
G) Current local time: 16:11:47.614477
PS C:\Users\Tejas>
```

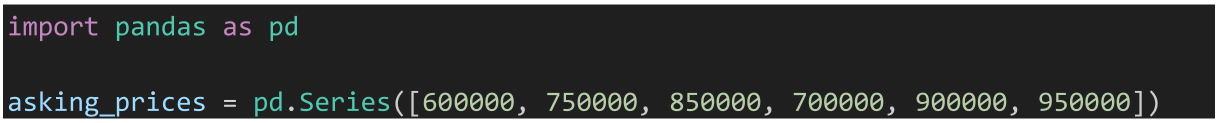


```
import pandas as pd

s = pd.Series(['X', 'Y', 'T', 'Aaba', 'Baca', 'CABA', None, 'bird', 'horse',
'dog'])

upper_case = s.str.upper()
print("Uppercase values:")
print(upper_case)

lower_case = s.str.lower()
print("\nLowercase values:")
print(lower_case)

string_length = s.str.len()
print("\nLength of each string:")
print(string_length)
```

Output:



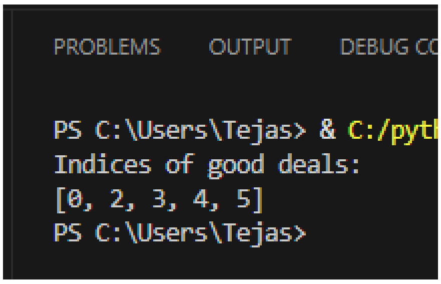
```
0        X
1        Y
2        T
3     AABA
4     BACA
5     CABA
6     None
7     BIRD
8    HORSE
9      DOG
dtype: object

Lowercase values:
0        x
1        y
2        t
3     aaba
4     baca
5     caba
6     None
7     bird
8    horse
9      dog
dtype: object

Length of each string:
0    1.0
1    1.0
2    1.0
3    4.0
4    4.0
5    4.0
6    NaN
7    4.0
8    5.0
9    3.0
```



```python
import pandas as pd

asking_prices = pd.Series([600000, 750000, 850000, 700000, 900000, 950000])
```

```
fair_prices = pd.Series([650000, 730000, 880000, 750000, 910000, 970000])

good_deals = asking_prices <= fair_prices

good_deals_indices = good_deals[good_deals == True].index.tolist()

print("Indices of good deals:")
print(good_deals_indices)
```

Output:

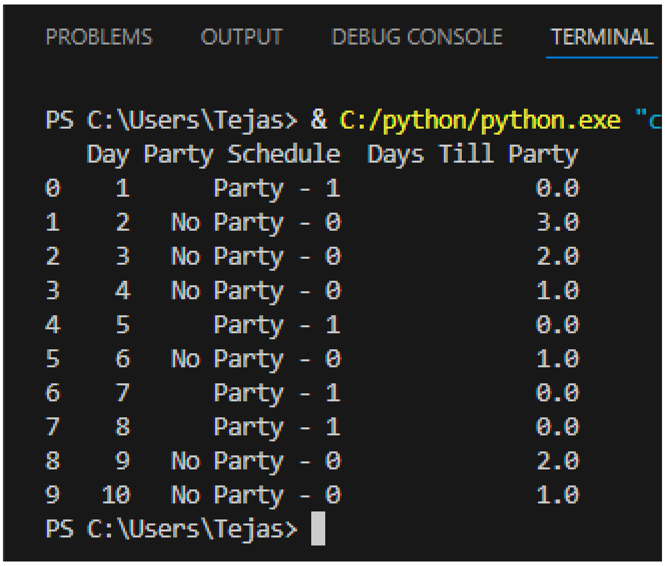


```
PS C:\Users\Tejas> & C:/pyth
Indices of good deals:
[0, 2, 3, 4, 5]
PS C:\Users\Tejas>
```

```
import pandas as pd
import numpy as np

party_data = np.random.randint(0, 2, size=10)
```

```
df = pd.DataFrame({
    'Day': range(1, 11),
    'Party Schedule': party_data
})

df['Days Till Party'] = np.nan

next_party = len(df)

for i in range(len(df)-1, -1, -1):
    if df.loc[i, 'Party Schedule'] == 1:
        next_party = i
        df.loc[i, 'Days Till Party'] = 0
    elif next_party is not None:
        df.loc[i, 'Days Till Party'] = next_party - i

for i in range(len(df)-1, -1, -1):
    if pd.isna(df.loc[i, 'Days Till Party']):
        df.loc[i, 'Days Till Party'] = len(df) - i

df['Party Schedule'] = df['Party Schedule'].replace({0: 'No Party - 0', 1:
'Party - 1'})

print(df)
```

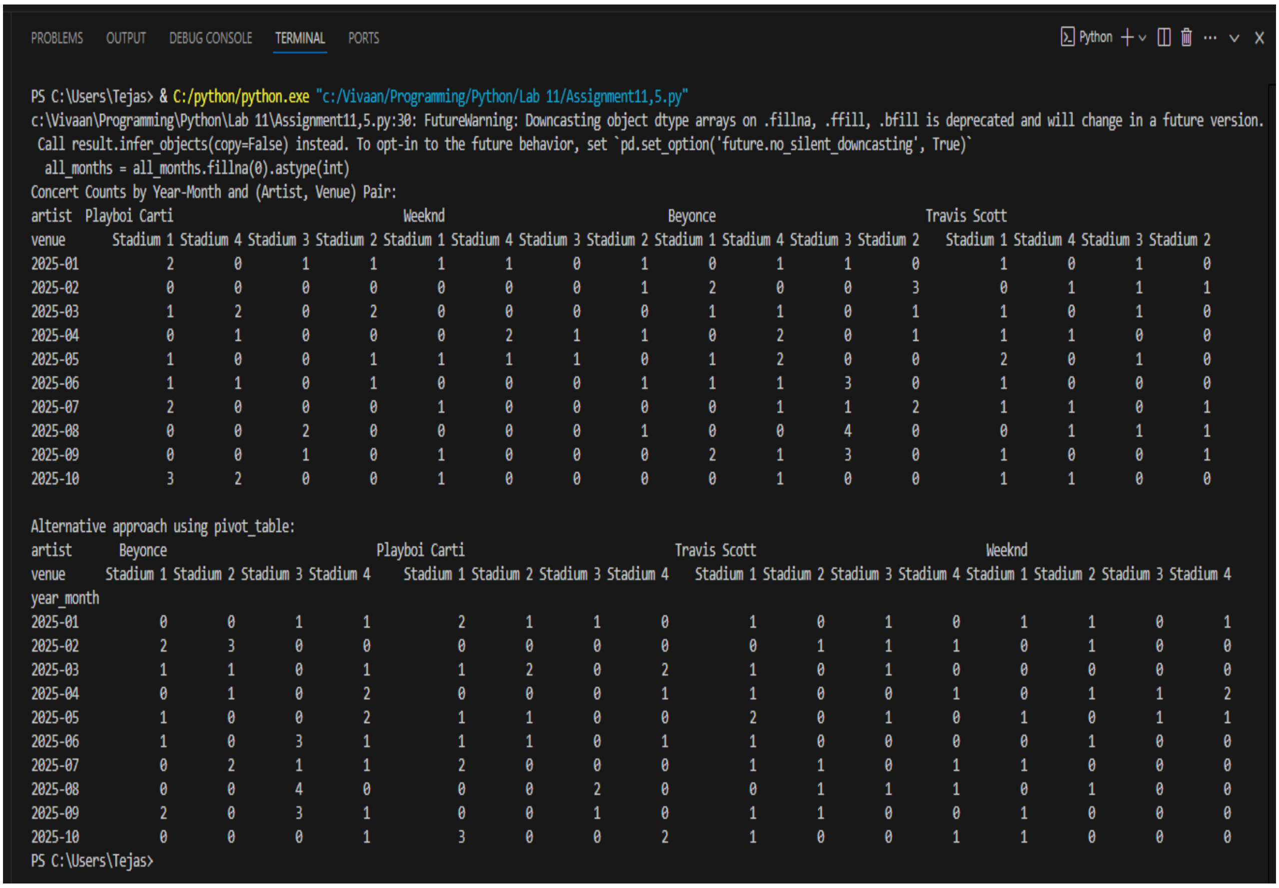
Output:



```
PS C:\Users\Tejas> & C:/python/python.exe "c
   Day Party Schedule  Days Till Party
0    1      Party - 1              0.0
1    2   No Party - 0              3.0
2    3   No Party - 0              2.0
3    4   No Party - 0              1.0
4    5      Party - 1              0.0
5    6   No Party - 0              1.0
6    7      Party - 1              0.0
7    8      Party - 1              0.0
8    9   No Party - 0              2.0
9   10   No Party - 0              1.0
PS C:\Users\Tejas> 
```

```
import pandas as pd
import numpy as np

concerts = pd.DataFrame({
    'date': pd.date_range(start='2025-01-01', periods=100, freq='3D'),
    'artist': np.random.choice(['Travis Scott', 'Weeknd', 'Playboi Carti',
'Beyonce'], 100),
    'venue': np.random.choice(['Stadium 1', 'Stadium 2', 'Stadium 3', 'Stadium
4'], 100)
})

concerts['year_month'] = concerts['date'].dt.strftime('%Y-%m')

artists = concerts['artist'].unique()
venues = concerts['venue'].unique()

artist_venue_pairs = pd.MultiIndex.from_product([artists, venues],
names=['artist', 'venue'])

concert_counts = concerts.groupby(['year_month', 'artist',
'venue']).size().unstack(level=[1, 2])

all_months = pd.DataFrame(index=concerts['year_month'].unique(),
columns=artist_venue_pairs)

for year_month in concerts['year_month'].unique():
    for artist in artists:
        for venue in venues:
            try:
                count = concert_counts.loc[year_month, (artist, venue)]
                all_months.loc[year_month, (artist, venue)] = count
            except (KeyError, ValueError):
                all_months.loc[year_month, (artist, venue)] = 0

all_months = all_months.fillna(0).astype(int)

all_months = all_months.sort_index()

print("Concert Counts by Year-Month and (Artist, Venue) Pair:")
print(all_months)

print("\nAlternative approach using pivot_table:")
pivot_result = pd.pivot_table(
    concerts,
    index='year_month',
    columns=['artist', 'venue'],
    aggfunc='size',
    fill_value=0
)
print(pivot_result)
```

Output:



```
PS C:\Users\Tejas> & C:/python/python.exe "c:/Vivaan/Programming/Python/Lab 11/Assignment11,5.py"
c:\Vivaan\Programming\Python\Lab 11\Assignment11,5.py:30: FutureWarning: Downcasting object dtype arrays on .fillna, .ffill, .bfill is deprecated and will change in a future version.
 Call result.infer_objects(copy=False) instead. To opt-in to the future behavior, set `pd.set_option('future.no_silent_downcasting', True)`
  all_months = all_months.fillna(0).astype(int)
Concert Counts by Year-Month and (Artist, Venue) Pair:
artist  Playboi Carti                                Weeknd                                  Beyonce                                 Travis Scott
venue       Stadium 1 Stadium 4 Stadium 3 Stadium 2 Stadium 1 Stadium 4 Stadium 3 Stadium 2 Stadium 1 Stadium 4 Stadium 3 Stadium 2   Stadium 1 Stadium 4 Stadium 3 Stadium 2
2025-01             2         0         1         1         1         1         0         1         0         1         1         0           1         0         1         0
2025-02             0         0         0         0         0         0         0         1         2         0         0         3           0         1         1         1
2025-03             1         2         0         2         0         0         0         0         1         1         0         1           1         0         1         0
2025-04             0         1         0         0         0         2         1         1         0         2         0         1           1         1         0         0
2025-05             1         0         0         1         1         1         1         0         1         2         0         0           2         0         1         0
2025-06             1         1         0         1         0         0         0         1         1         1         3         0           1         0         0         0
2025-07             2         0         0         0         1         0         0         0         0         1         1         2           1         1         0         1
2025-08             0         0         2         0         0         0         0         1         0         0         4         0           0         1         1         1
2025-09             0         0         1         0         1         0         0         0         2         1         3         0           1         0         0         1
2025-10             3         2         0         0         1         0         0         0         0         1         0         0           1         1         0         0

Alternative approach using pivot_table:
artist       Beyonce                                 Playboi Carti                               Travis Scott                                Weeknd
venue      Stadium 1 Stadium 2 Stadium 3 Stadium 4    Stadium 1 Stadium 2 Stadium 3 Stadium 4   Stadium 1 Stadium 2 Stadium 3 Stadium 4 Stadium 1 Stadium 2 Stadium 3 Stadium 4
year_month
2025-01            0         0         1         1            2         1         1         0           1         0         1         0         1         1         0         1
2025-02            2         3         0         0            0         0         0         0           0         1         1         1         0         1         0         0
2025-03            1         1         0         1            1         2         0         2           1         0         1         0         0         0         0         0
2025-04            0         1         0         2            0         0         0         1           1         0         0         1         0         1         1         2
2025-05            1         0         0         2            1         1         0         0           2         0         1         0         1         0         1         1
2025-06            1         0         3         1            1         1         0         1           1         0         0         0         0         1         0         0
2025-07            0         2         1         1            2         0         0         0           1         1         0         1         1         0         0         0
2025-08            0         0         4         0            0         0         2         0           0         1         1         1         0         1         0         0
2025-09            2         0         3         1            0         0         1         0           1         1         0         0         1         0         0         0
2025-10            0         0         0         1            3         0         0         2           1         0         0         1         1         0         0         0
PS C:\Users\Tejas>
```